REMARKS/ARGUMENTS

By this Amendment, claims 29, 31, 32 and 35 have been amended, claims 33, 38-40 have been cancelled and claims 41-44 are newly presented. After entry of these amendments, claims 29-32, 34, 35, and 41-44 are pending in the application.

Claims 29, 31, 32, and 35 have been amended to recite that the antibodies used in the methods of the invention "bind to" the recited polypeptides. This language is added to state more particularly the subject matter of the claimed invention and does not alter the scope of the claims. Claims 29 and 32 have been amended to recite that the encoded amino acid sequence is 80% or more identical to SEQ ID NO: 3 or 4. Support for these amendments is found on page 9, lines 20-24. Claim 29 and 32 have been amended to recite particular stringent hybridization conditions. Support for these amendments is found on page 9, lines 1-3. The claims also include an explicit recitation that the polyepeptides of (v) include a single transmembrane domain and five Ig domains. Support for these amendments is found in Figure 6. Claims 29 and 32 have been further amended to clarify that the nucleotide sequences of (v) hybridize to the "complement of" the nucleotide sequence of (i). Claim 32 has been amended to recite that the claimed method results in the production of "a cell population comprising" dopaminergic neuron precursor cells. Support for this amendment is found, for example, on page 4, lines 3-4; page 25, lines 3-4; page 26, lines 17-19; page 26, line 34 to page 27, line 2; and page40, lines11-12. No new matter is added by these amendments.

New claims 41-44 are added to claim more particularly the subject matter of the claimed invention. These claims find support in either claim 29 or 32, from which they depend. No matter is added by these claims.

Finally, part (i) of claims 29, 32, 43 and 44 refers to a nucleotide sequence comprising nucleotides 178-2280 of SEQ ID NO: 1. An obvious typographical error in claims 29 and 32 erroneously referred to nucleotides 177-2280 of SEQ ID NO: 1. As is obvious from both SEQ ID NO: 1 and Figure 1, the start codon (ATG) begins at nucleotide 178, not 177. No new matter is added by this correction.

Each of the grounds for rejection raised in the Office Action will be addressed below.

Information Disclosure Statement

In the Office Action, the Examiner notes that Form PTO/SB/08 submitted with the Information Disclosure Statement mailed December 28, 2005, indicates that it includes 4 pages, but only two pages were provided. The reference to 4 pages was a typographical error . The form includes only 2 pages.

Claim Objections

The Examiner notes that the listing of claims in the response filed April 4, 2008 did not include claims 39-40. These claims are indicated as cancelled in the present response.

Claim Rejections - 35 USC §101

Claim 38 was rejected under 35 U.S.C. §101 for allegedly being directed to non-statutory subject matter. Claim 38 has been canceled. Thus, this rejection has been rendered moot.

Claim Rejections - 35 USC § 112, first paragraph

Claims 29 - 35 and 38 were rejected under 35 U.S.C. §112, first paragraph, as lacking enablement and an adequate written description. The Examiner acknowledges that the specification is enabling for antibodies which bind to SEQ ID NO:3 or 4 and methods of selecting cells by contacting the cells with such antibodies, but asserts that the specification does not reasonably provide enablement for the full scope of antibodies as recited in both the product and methods claims. As noted above, the claims now explicitly recite that the antibodies "bind to" the recited polypeptides. This language has been used to clarify the interaction of the antibodies and the polypeptides but does not alter the scope of the claims.

In the Office Action, the Examiner asserted the following:

I. parts (ii) - (v) of each claim encompass antibodies that bind to proteins encoded by a nucleic acid complementary to those nucleic acids that encode SEQ ID NO:3 or 4. (page 4, lines 6-20, and page 5, lines 18-24)
II. part (iv) of each claim allows for there to be a large number of insertions, deletions, or substitutions. (page 4, lines 21-26, and page 5, lines 24-29)

III. part (v) of claims 29, 32, and 38 reads on antibodies to proteins encoded by different nucleic acids; there is no requirement for any degree of conservation or identity at the protein level. (page 4, lines 21-26, and page 5, lines 24-29)

With respect to item I above, the complementary sequence has been deleted in parts (i) to (iv) of claims 29 and 32. Part (v) has been amended to recite only a nucleotide sequence that hybridizes with the "complementary" nucleotide sequence of part (i). With respect to item II, part (iv) of claims 29 and 32 has been amended to refer to a percent identity of the amino acid sequence to SEQ ID NO: 3 or 4. With respect to item III, part (v) of claims 29 and 32 has been amended to refer to specific hybridization conditions.

The Examiner further expressed concern that the polypeptides bound by the antibodies used in the methods of the invention need not have any structural relation to SEQ ID NO: 3 or 4. (*see* page 5, last of the 2nd paragraph of section 8). The claims now explicitly recite that the protein encoded by the nucleic acid of (v) has structural features shared by SEQ ID NO: 3 and 4 (*i.e.,* a single transmembrane domain and five Ig domains).

Claim Rejections - 35 USC §112, second paragraph

The Examiner rejects claims 29-35 and 38 because the term "stringent conditions" is allegedly indefinite. As noted above, part (v) has been amended to refer explicitly to specific hybridization conditions. This rejection is thus overcome.

The Examiner rejects claims 32 to 35, because the steps recited in the claim allegedly will not allow the skilled artisan to accomplish the goal stated in the preamble (namely, "producing" a dopaminergic neuron precursor cell). In response, claim 32 has been amended so that it relates to a method of producing a "cell population" comprising dopaminergic neuron precursor cells and includes the step of obtaining such cells after the step of contacting a sample with an antibody. Even if the dopaminergic neuron precursor cells are merely selected from a tissue sample, the obtained cell population is newly produced by the process. As such, applicants believe the amended claims overcome this rejection.

Claim Rejections - 35 USC § 102

Claims 32, 35, and 38 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Carulli (WO/01198630). Claim 38 has been canceled and is not addressed further.

Carulli teaches a protein referred to as gp354, that allegedly has 85.6% identity to SEQ ID NO: 3. Carulli also teaches antibodies against gp354. The Examiner asserts that because claim 32 includes only a step of contacting cells with the recited antibodies, Carulli anticipates claims 32 and 35. Applicants note that claim 29, which includes a step of "selecting the dopaminergic neuron precursor cell" is not included in the present rejection. Claim 32 has been amended to include the step of "obtaining the cell population comprising dopaminergic neuron precursor cells". Because this step is comparable to the "selection" step in claim 29, Applicants respectfully submit that the rejections to claims 32 and 35 should be withdrawn.

Claims 32, 35, and 38 are further rejected under 35 U.S.C. §102(a) as being anticipated by Sun (2003) Genomics 82(2): 1 30- 142. According to the Examiner, Sun discloses a protein that is 99.7% identical to SEQ ID NO: 3. The claims are rejected under the same logic used in the rejection over Carulli. This rejection is overcome by the above amended claims for the same reasons noted above.

Claim 38 is rejected under 35 U.S.C. §102(b) as being anticipated by Baker (U.S. Patent Application Publication 2002/0127584) and under 35 U.S.C. §102(e) as being anticipated by Goddard (U.S. Patent 7,304,145). Cancellation of claim 38 renders both rejections moot.

Claims 29, 31-33, 35, and 38 are rejected under 35 U.S.C. §102(e) as being anticipated by Jensen (U.S. Patent Application Publication 2004/0241170). According to the Examiner, Jensen teaches a protein referred to as FA1 and antibodies against the protein. Jensen allegedly teaches contacting cell populations including neuronal progenitor cells with the FA1 antibodies and subsequently selecting those cells which have bound to the antibody. The Examiner acknowledges that FA1 does not share a high degree of identity with either SEQ ID NO:3 or 4, but asserts that the claims encompass use of antibodies described by Jensen.

As noted above, claims 29 and 32 require in (iv) that the amino acid sequence have at least 80% identity with SEQ ID NO: 3 or 4. In addition, part (v) recite specific

hybridization conditions. The claims clearly distinguish the polypeptides from the sequence of FA1, which, as admitted by the Examiner, shows no significant similarity to SEQ ID NO: 3 or 4.

Claims 29 - 35 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Buck (U.S. Patent Application Publication 2003/0109039). The Examiner supports this rejection by asserting that the claims encompass antibodies against proteins with "unlimited possible variations." Since the basis for this rejection is essentially the same as that used in the rejection over Jensen, this rejection should be overcome for the same reasons as noted above. In the absence of a showing that the proteins disclosed in Buck show any significant similarity to SEQ ID NO: 3 or 4, the rejection should be withdrawn.

Double Patenting

Claim 38 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5 and 10 of copending Application No. 11/622,312. Since claim 38 has been canceled, this rejection is now moot.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If a telephone conference would expedite prosecution of this application, the Examiner is invited to telephone the undersigned at 415-576-0200.

Respectfully submitted,

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